

Appl. No. 09/868,379

Amendment dated June 22, 2004

Reply to Non-Final Office Action of March 22, 2004

REMARKS

In the Office Action mailed March 22, 2004, claim 10 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 10 has been amended to provide antecedent basis for the non-ionic surfactant. Accordingly, it is respectfully requested that the §112, second paragraph rejection be withdrawn.

Claims 8-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rudin, et al. WO 98/18719 in view of Burghard, U.S. Patent No. 5,935,275 and Remington's Pharmaceutical Sciences.

Claim 8 recites a suspension of one or more phosphate, fluoride, or fluorophosphate calcium salts in a liquid medium in which the salts are less than 1 g/l soluble. The calcium salts comprise primary particles having diameters of from 5 to 50 nanometers and lengths of from 10 to 150 nanometers, stabilized against agglomeration by a content of at least 0.01% by weight, based on the weight of the suspension, of a water-soluble surfactant or of a water-soluble polymeric protective colloid adsorbed onto the particles.

The references of record, alone or in combination, fail to disclose such a suspension. Rudin, et al. is directed to a method for producing a suspension of a hydroxyapatite by a concentration method. The mechano-structural thixotropic properties of the hydroxyapatite are used to prepare the suspension (page. 4, 1st full paragraph). In particular, the method relies on a sol-gel transition of the particles. In order to form the sol-gel,

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interactions between the articles must occur, through Van der Waals forces, and the like.

As the Examiner acknowledges, Rudin, et al. does not teach addition of a surfactant or a polymeric protective colloid to prevent agglomeration. The Examiner points to Burgard, as teaching "methods of stabilizing insoluble inorganic nanoparticles against agglomeration, including precipitation in the presence of surface active compounds." The Examiner suggests that Remington's Pharmaceutical Sciences provides motivation for the combination. Applicants respectfully traverse.

Rudin's process relies on agglomeration of particles and creation of a sol-gel in order to create the suspension. At the concentrations disclosed in Rudin, the particles are expected to be highly agglomerated. Adding a surfactant to the particles of Rudin would destroy the cohesion of Rudin's particles and thus render the method of Rudin inoperative. Thus Rudin teaches against adding a component which would destroy the cohesive forces. Accordingly, there is no motivation for providing a surfactant in Rudin's method.

Burgard, et al. discloses a process for forming oxide particles by precipitating them in the presence of a surface-blocking substance. The method of Burgard stabilizes the particles by creating a spherical barrier against agglomeration. Such a treatment would, if used on the hydroxyapatite particles of Rudin, render Rudin's process inoperative by irreversibly destroying the cohesive forces between particles. Thus, there is no motivation for

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using Burgard's precipitation method to create the suspension of Rudin.

Further, there is no disclosure of any phosphate, fluoride or fluorophosphates calcium salts in Burgard, et al., as claimed here.

Remington's Pharmaceutical Sciences does not provide the motivation for going against the teaching of Rudin by using a surfactant. Remington's merely teaches that surfactants can be used as dispersion aids. This is contrary to the teaching of Rudin, which requires the particles to be agglomerated for Rudin's process to be effective.

Accordingly, it is submitted that claim 8, and claims 9-10 dependent therefrom, distinguish patentably over the references of record.

Claim 11 recites a process for the preparation of a suspension of poorly soluble calcium salts in which precipitation is carried out in the presence of water-soluble surfactants or water-soluble polymeric protective colloids such that a content of at least 0.01% by weight, based on the weight of the suspension, of the water-soluble surfactant or water-soluble polymeric protective colloid is adsorbed onto the particles.

Rudin makes no suggestion of using a surfactant or colloid in a precipitation step, as presently claimed. Further, there is no motivation for combining Burgard with Rudin. The surface blocking agents of Burgard would be expected to resist agglomeration and cohesion of Rudin's particles, thus preventing the cohesion which Rudin

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requires in order to prepare a suspension. Remington's also teaches against the desirability of such a combination.

Accordingly, it is submitted that claim 11 and dependent claim 12 distinguish patentably and unobviously over the references of record.

Claim 13 recites toothpaste comprising one or more silica polishing agents, humectants, binders or aromas and 0.1-5% by weight of one or more calcium salts present in the form of a suspension stabilized against agglomeration by a water-soluble surfactant or water-soluble polymeric protective colloid.

The references of record make no suggestion of such a toothpaste. The suspension of Rudin does not include a salt stabilized against agglomeration. There is no motivation for combining Burgard with Rudin as Burgard teaches that surface blocking agents provide a barrier against agglomeration. Such a barrier would prevent the particles of Rudin from forming cohesive bonds and thus destroy the method of Rudin. Remington's also teaches against the desirability of such a combination.

Accordingly, it is submitted that claim 13 distinguishes patentably and unobviously over the references of record.

Claim 14 recites a method of remineralizing teeth comprising the steps of applying to a tooth a remineralizing-effective amount of a suspension of one or more phosphate, fluoride, or fluorophosphate calcium salts in a liquid medium, stabilized against agglomeration by a water-soluble surfactant or polymeric protective colloid.

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The suspension of Rudin does not include a calcium salt stabilized against agglomeration. There is no motivation for combining Burgard with Rudin as Burgard teaches that surface blocking agents provide a barrier against agglomeration. Such a barrier would prevent the particles of Rudin from forming cohesive bonds and thus destroy the method of Rudin. Remington's also teaches against the desirability of such a combination.

Accordingly, it is submitted that claim 14 distinguishes patentably and unobviously over the references of record.

Claims 8-14 stand rejected under the doctrine of obviousness-type double patenting over claims 1-5 of Application No. 10/297,889. In view of the cancellation of claims 1-5 in Application No. 10/297,889, Applicants believe this rejection is moot and respectfully request that it be withdrawn. Moreover, a new rejection of this type should not be made over new claims 20-25 of the '899 application, which correspond to original claims 1-5.

Claim 20 of the '899 application recites a composition for treating tooth and/or bone tissue, comprising a calcium salt of low solubility in water, selected from phosphates, fluorides and fluorophosphates, which optionally may additionally contain hydroxyl and/or carbonate groups, where the calcium salts are in the form of nanoparticulate primary particles with an average particle diameter in the range from 5 to 300 nm, and (b) a polyelectrolyte. The polyelectrolyte, as recited in claim 22 of the '899 application, may be selected from polyaspartic acid, alginic acids, pectins, deoxyribonucleic acids, ribonucleic

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acids, polyacrylic acids and polymethacrylic acid. The claims of the present application do not require a polyelectrolyte.

The claims of the present application do require a water-soluble surfactant or water-soluble polymeric protective colloid to be adsorbed onto the particles. The calcium salts comprise primary particles having diameters of from 5 to 50 nanometers and lengths of from 10 to 150 nanometers. The claims of the '899 do not require particles in these size ranges.

Thus, products and methods which used a polyelectrolyte but did not include particles of the presently claimed dimensions could be formed which infringe the '899 patent application without infringing the present application. Conversely, products and methods which lack a polyelectrolyte and include a water-soluble surfactant adsorbed onto the particles could be formed which would not infringe the '899 patent application while infringing the present application. Therefore the claims of the two applications are not commensurate in scope. Moreover and more importantly, the claims of the '899 application do not teach or suggest the surfactant or colloid of the present claims. For this reason it is requested that the double patenting rejection be withdrawn.

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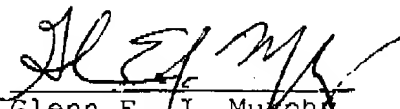
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CONCLUSION

In view of the amendments and remarks above, Applicants ask for reconsideration and allowance of all pending claims (claims 8-14). Should any fees be due for entry and consideration of this Amendment that have not been accounted for, the Commissioner is authorized to charge them to Deposit Account No. 01-1250.

Respectfully submitted,



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